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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/584,955	06/02/2000	Stephen Francis Bush	RD-26,450/USA	5231
7590 10/07/2004			EXAMINER	
GENERAL ELECTRIC COMPANY (PCPI)			WONG, BLANCHE	
C/O FLETCHER YODER			ART UNIT	
PO BOX 692289			PAPER NUMBER	
HOUSTON, TX 77269-2289			2667	

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/584,955	BUSH, STEPHEN FRANCIS	
	Examiner	Art Unit	
	Blanche Wong	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claim 1** is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hsu et al. (U.S. Pat No. 5,875,181).

Regarding claim 1, Hsu discloses a communication network (Fig. 1) comprising a plurality of nodes (101-1 through N and 102-1 through M) including at least one earth station (col. 2, ln. 60) and at least one spacecraft 105 (satellite), wherein said spacecraft comprises an active (transmitting and receiving) node of said network.

Regarding claim 2, Hsu discloses in the network of claim 1 wherein said spacecraft active node includes a physical (packetized information from the satellite, col. 2, ln. 65) layer and a link (clearly, there is a communication link between the satellite and earth station in order to transmit or receive, e.g. beam, col. 2, ln. 66) layer conforming to a protocol of an OSI reference (Frame relay networks are compatible with OSI's reference model's seven layers.).

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2667

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1,6,10,13** are rejected under 35 U.S.C. 102(e) as being clearly by Falk et al. (U.S. Pat No. 6,580,716) ("Falk '716").

Regarding claims 1,6,13, Falk '716 discloses a communication network Fig. 1 comprising a plurality of nodes (102,104,106) including at least one earth station (UET or user earth terminal 102,106) and at least one spacecraft (satellite 104) (On p. 2, ln. 16, of the application, "spacecraft" refers to any man-made vehicle; A satellite is a man-made vehicle) wherein said spacecraft 104 comprises an active node 112 (ATM switch functions)(On p. 6, ln. 15, of the application, "active node" is a node comprising a node operating system and at least one node execution environment; A switch functions as an operating system and ATM is an execution environment).

Regarding claims 10 and 13, Falk '716 discloses the transmission of ATM switch coordination information between UET and Satellite 206 (said earth station ... transmit at least one object to said spacecraft active node).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 2-3,21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Falk 6,580,716 in view of Black et al. (U.S. Pat No. 6,377,561).

Regarding claims 2 and 3, Falk discloses the network of claim 1. (See para. 8) However, Falk fails to explicitly show a spacecraft active node that includes a physical layer, a link layer and a network layer conforming to a protocol of an OSI reference model, as recited in claims 2 and 3 respectively.

Black discloses a physical layer, a link layer and a network layer conforming to a protocol of an OSI reference model. Black shows that the satellite system serves as a subnetwork of the Internet and is an overall interface to the terrestrial communications protocol. Col. 29, ln. 28-43.

At the time of invention was made, it would have been prima facie obvious to one of ordinary skill in the art to include in Falk OSI layers as taught by Black, in order to provide optimized dynamic bandwidth-on-demand on a packet-by-packet basis. Black, col. 2, ln. 22-27.

Regarding claim 21, Falk '167 further discloses a communication network Fig. 1 including at least one spacecraft node 12 and at least one earth station node 16, wherein said earth station node is configured to transmit 32 to said spacecraft node at least on object comprising data, as recited in claim 21. Black further discloses a transmission comprising data and a protocol associated with said data, said protocol including information defining at least one node of said network to which said data is to

be forwarded from said spacecraft node. (on-board switching system OBSS, col. 3, ln. 27-31, has an on-board network controller ONBC, col. 8, ln. 53, in which there is computing capability on-board for time critical functions, col. 8, ln. 51-52, and it is an intelligent on-board payload control, col. 8, ln. 67. Additionally, a full *software* up-load and payload configuration can then be completed via OBNC, col. 9, ln. 22-23 [emphasis added]. Black requires a very efficient uplink access *protocol* and responsive capacity assignment *algorithm*, col. 10, ln. 66-67 [emphasis added].)

7. **Claims 4-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Falk and Black as applied to claims 2-3 above, and further in view of Bishop, Jr. et al. (U.S. Pat No. 6,078,577).

Regarding claims 4 and 5, the combination of Falk and Black discloses the network of claim 3. (See para. 11) However, Black fails to explicitly show a spacecraft active node that includes a transport layer and an application layer conforming to a protocol of an OSI reference model, as recited in claims 4 and 5 respectively.

Bishop discloses a spacecraft active node that includes a transport layer and an application layer conforming to a protocol of an OSI reference model. Bishop shows subscriber units 30 that may be located anywhere on the surface of earth or in the atmosphere above earth, for example in an airplane 32 (On p.2, ln. 16, of the application, "spacecraft" refers to any man-made vehicle; An airplane is a man-made vehicle), and the subscriber units 30 may be computers capable of sending email messages. Col. 2, ln. 59-col. 3, ln. 4. (To send an email message requires creating an

email with an email application residing on an application layer and sending the email via a transport layer. The transport layer connects to the network layer and the email message is enveloped in a data link layer and physically delivered through a physical layer.)

At the time of invention was made, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the combination of Falk and Black, an application layer and a transport layer as taught in Bishop, in order to increase utilization (e.g. email) of available channels and bandwidth. Bishop, col. 1, ln.30-34.

8. **Claims 7-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Falk '716 in view of Wiedeman (U.S. Pat No. 5,594,780).

Regarding claim 7, the combination of Falk '716 discloses the network of claim 1. However, Falk fails to explicitly show terrestrial data link, as recited in claim 7

Wiedeman discloses at least one terrestrial-based gateway 12,14,16,18, and a plurality of terrestrial communications links 101 (terrestrial data link). It is obvious where there is terrestrial-based gateway, there is communication and thus data link.

At the time of invention was made, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Falk and Wiedeman to offer substantial advantages while integrating with existing telephone systems.

Wiedeman, col. 3, ln. 36-49.

Wiedeman further discloses a PSTN 21, as recited in claim 8; and a wireless data link 503,505 (cellular telephones are wireless data link), as recited in claim 9.

9. **Claims 11-12,20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Falk 6,580,716 ("Falk '716") and Black as applied to claim 2 above, and further in view of Falk (U.S. Pat No. 6,430,167)("Falk '167").

Regarding claim 11, the combination of Falk '716 and Black discloses the network of claim 2. However, Falk 6,580,716 fails to explicitly show communication using a TCP/IP transmission protocol, as recited in claims 11.

Falk 6,430,167 clearly discloses destination addressing (Fig. 3 shows IP addressing).

At the time of invention was made, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Black and both Falk's in order to achieve higher order adaptation. Falk 6,430,167, col. 3, ln. 65-col. 4, ln. 4.

Regarding claim 12, Falk '167 further discloses ATM techniques. (Falk '167 supports ATM, col. 3, ln. 66-67).

Regarding claim 20, Falk '167 discloses data fusion and packet dropping, as recited in claim 20. Falk 6,430,167 shows steps to divide the message and reassemble back into the original message (data fusion)(col. 2, ln. 12-29) and a scheme to send data in a connectionless manner over a system which supports connection-oriented

communications (connection-oriented communication is used when resources need to be nailed down to guarantee that the data is received (col. 1, ln. 15-17) whereas connectionless communication are traditionally associated with networks where an association between a sender and receiver exists on a per-packet basis (col. 2, ln. 31-35). Connectionless protocol is a “best-effort” protocol (col. 1, ln. 44) and therefore some packet can drop during communication.)(packet dropping).

10. **Claim 14-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Falk 6,580,716 in view of Bishop, Jr. et al. (U.S. Pat No. 6,078,577).

Regarding claims 14-18, Falk discloses a method of communication over a network Fig. 1 comprising at least one earth station (UET or user earth terminal 102,106) and at least one spacecraft (satellite 104) (On p. 2, ln. 16, of the application, “spacecraft” refers to any man-made vehicle; A satellite is a man-made vehicle), as recited in claim 14. Falk also discloses transmitting an object from the group consisting of an earth station to a spacecraft (the transmission of ATM switch coordination information between UET and Satellite 206) and the object comprising data conforming to at least one protocol and at least one method comprising an executive code for implementing said protocol of said data (coordination information can be protocol and executable code), the spacecraft receiving the object (transmission between two stations is both transmitting and receiving at both ends), the spacecraft extracting at least said executable code from said object and temporarily storing at least said

executable code in memory (extraction and buffering is inherently necessary to receive and thus make sense of the coordination information), as recited in claim 14.

However, Falk fails to explicitly show a method for dynamically configuring a spacecraft in accordance with an OSI reference model and a spacecraft that executes said code for implementing at least one layer of an OSI reference model, as recited in claim 14. Bishop discloses a method for dynamically configuring a spacecraft in accordance with an OSI reference model and a spacecraft that executes said code for implementing at least one layer of an OSI reference model, as recited in claim 14. Falk fails to disclose the method according to claim 14 wherein said at least one layer comprises a physical layer, a data link layer, a network layer, a transport layer and an application layer, as recited in claims 15-18.

Bishop discloses a method for dynamically configuring a spacecraft (subscriber units 30 that may be located anywhere on the surface of earth or in the atmosphere above earth, for example in an airplane 32. Col. 2, ln. 59-61. The applicant refers to a "spacecraft" as any man-made vehicle. P.2, ln. 16. An airplane is a man-made vehicle.) in accordance with an OSI reference model and a spacecraft that executes said code for implementing at least one layer of an OSI reference model (the subscriber units 30 may be computers capable of sending email messages. Col. 3, ln. 1-4.), as recited in claim 14. Bishop shows a physical layer, a data link layer, a network layer, a transport layer and an application layer (To send an email message requires creating an email with an email application residing on an application layer and sending the email via a transport layer. The transport layer connects to the network layer and the email

message is enveloped in a data link layer and physically delivered through a physical layer.), as recited in claims 15-18.

At the time of invention was made, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the combination of Falk, an OSI reference model as taught in Bishop, in order to increase utilization (e.g. email) of available channels and bandwidth. Bishop, col. 1, ln.30-34.

11. **Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over Falk 6,580,716 and Bishop as applied to claims 14-18 above, and further in view of Falk (U.S. Pat No. 6,430,167).

Regarding claim 19, the combination of Falk and Bishop discloses the method of claim 14. However, the combination fails to expressly show IP and ATM protocol, as recited in claim 19.

Falk 6,430,167 clearly discloses destination addressing (Fig. 3 shows IP addressing) and supports ATM (col. 3, ln. 66-67).

At the time of invention was made, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Black and both Falk's in order to achieve higher order adaptation. Falk 6,430,167, col. 3, ln. 65-col. 4, ln. 4.

Response to Amendment

12. Although the “active’ node is a node comprising a node operating system and at least one node execution environment”, as disclosed in the Specification p.6, an active node is not defined as such in the Specification. That is, “a node comprising a node operating system and at least one node execution environment EE” is just an example of an “active,” as oppose to an inactive, node. An active node can be a node that stays on, as oppose to off. The limitations of an “active” node, including an operating system and executive environment, must be clarified in the claims.

It follows that if an EE limitation is included in the claims, then “[t]he objects being delivered include code for the virtual machine that is to be interpreted, i.e. executed” and “[i]t is executing this code ... that allows the operation of the spacecraft to be ‘dynamically reconfigured to support OSI modeled communications,” both as recited in Response p.13.

13. Similarly, it follows that if an EE limitation is included in the claims, then “a capability to receive code transmitted from a ground station to be executed on board the satellite and dynamically reconfigure the operation of the operation of the spacecraft to support OSI model communications,” as recited in Response p. 15.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Haugli et al. (U.S. Pat No. 5,991,279) discloses a wireless packet data distributed communications system with satellite 18 and earth station 11.

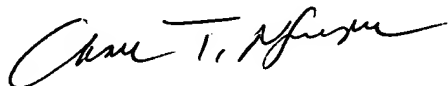
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blanche Wong whose telephone number is 571-272-3177. The examiner can normally be reached on Monday through Friday, 830am to 530pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BW

BW
September 13, 2004



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